

This water taken from the sea would greatly increase the lake and marsh areas on the land, and at the same time result in more or less extensively blanketing the earth with clouds. An extensive envelope of clouds about the earth would have two most important consequences. In the first place the sun's heat would be far more equably distributed. There would be no frigid poles nor superheated tropic zone. Hot and cold regions would be small and localized, and would occur only where the sun shone through the clouds. In the second place, an equality of temperature on the earth's surface, or even a fair approximation to it, coupled with fresh water seas, would mean a minimum of atmospheric circulation, and a general state of calm unbroken by storms such as we know today. Wave action would be very slight and there would be no destructive surf line. Ocean currents would be very slow.

The difference between the fauna of the oldest rocks and the fauna of the recent seas on close examination seems to be not so much a real difference in the animal types themselves as an apparent difference resulting from (1) more extensive land connections; (2) more equable distribution of the sun's heat; (3) more tranquil conditions, on land and in the sea; and (4) more extensive epicontinental waters.

These four factors are capable of very simple explanation, in large part if not indeed entirely, on the basis of the ever increasing saltness of the sea.

BOTANY.—*Pseudochaetochloa*, a new genus of grasses from Australia.

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Recently a fine collection of grasses was received from Mr. W. M. Carne, botanist of the Department of Agriculture of Western Australia. The plants were collected mostly in western and northwestern Australia. Many species were not previously represented in the National Herbarium. Among the specimens was one which could not be identified with any described species and possessed characters which did not agree with those of any genus as now delimited. It appears best to recognize the species as the type of a new genus rather than extend the characters of *Chaetochloa* (*Setaria*), to which it is allied. In *Chaetochloa*, a large genus of Paniceae, found in all the warmer regions of the earth, the spikelet is in the main like that of *Panicum*, but the inflorescence is interspersed with sterile branches or bristles. The fertile floret in *Chaetochloa*, *Panicum*, and their relatives, is indurate, differing distinctly from the sterile floret with its membranaceous nerved lemma, and the palea

is enclosed all around the edges by the inturned margin of the fertile lemma. Thus the fertile floret is a little box enclosing the caryopsis, and this box does not open even in germination, the base of the plantlet pushing its way through the lower part of the box.

In *Pennisetum* the fertile floret is like the sterile and the palea is not tightly enclosed. In *Pennisetum* and *Cenchrus* there are sterile branches in the inflorescence but these are gathered in a cluster below each spikelet or group of spikelets. In *Cenchrus* the whole cluster forms a bur (sandbur) and is deciduous from the main axis. In *Pennisetum* the cluster is also deciduous but is too soft to be called a bur. In the new genus described below the bristles are as in *Chaetochloa* but the spikelet is as in *Pennisetum*. But the whole branch is deciduous from the main axis.

*Pseudochaetochloa* Hitchc., gen. nov.

Spikelets as in *Panicum*, 2-flowered, the lower floret sterile but well developed; sterile and fertile lemmas membranaceous, similar in size, shape, and texture, acute; a single bristle subtending many of the spikelets as in *Chaetochloa*.

Type species, *P. australiensis* Hitchc.

*Pseudochaetochloa australiensis* Hitchc., sp. nov.

Perennial; culms erect from a decumbent base, glabrous, slightly scabrous below the panicle, 40 to 60 cm. tall; sheaths glabrous; ligule a dense ring of hairs about 1 mm. long; blades narrow, erect, those of the innovations scaberulous, involute, filiform, 15 to 25 cm. long, flexuous, those of the culm flat, as much as 4 mm. wide, scaberulous, narrowed at base, attenuate at apex, as much as 25 cm. long; panicle erect, narrow, rather dense, about 10 cm. long, the axis scabrous; branches as much as 1 cm. long, deflexed at maturity and finally deciduous from the main axis; pedicels mostly less than 1 mm. long, the branchlets bearing below some of the spikelets a splendor, antrorsely scaberulous bristle 2 to 5 mm. long; spikelets 5 to 6 mm. long, pale, glabrous, lanceolate; first glume 2 mm. long, obtuse, 3-nerved; second glume about 2.5 mm. long, acutish, 3-nerved; sterile lemma membranaceous like the glumes, acuminate, 5-nerved, the palea nearly as long; fertile lemma similar to the sterile, slightly longer, slightly more pointed, 5-nerved, the palea nearly as long.

Type in the U. S. National Herbarium, no. 1,172,752, collected at Devil's Pass, Napier Range, Kimberley Division, Western Australia, May, 1905, by W. V. Fitzgerald (no. 600).

The plant has the aspect of a species of *Chaetochloa*. The only specimen seen is rather meager, having only two panicles, one young, the other mature but with spikelets only on the lower half, the branches having been shed from the upper part of the axis.

In the spikelets examined no stamens were found in the sterile floret but the well-developed palea would indicate that this floret may be normally staminate.